

The Magazine of the College of Arts & Sciences at the University of North Carolina Wilmington

# Arts & Sciences

majors that

FOR ROCK

UNCW

## MESSAGE FROM THE DEAN

This issue of the *Arts & Sciences* magazine could have been titled Majors with a Future!

Ask any undergraduate student and he or she will tell you that the choice of a major is a “big deal.” True, it’s only one aspect of a total university experience that aims to prepare the student broadly for life in a changing world. But without question, the major is an important choice. I’ve noticed over the years that students often limit themselves in that choice more than they need to. They tend either to gravitate toward the familiar (psychology and business, anyone?) or consider only majors with an obvious connection to a specific career.

There’s nothing wrong with the more popular majors. They’re popular for good reasons! But the fact is, the college’s lesser-known and less frequently selected undergraduate degree programs provide some of the best life preparation and the broadest career options available anywhere. In this issue of *Arts & Sciences*, we’ve selected a few of these to tell you about.

For example, we offer a major in physical oceanography that builds on UNCW’s proven strength in marine science and emphasizes the research experience that professional oceanographers will need. And the major in anthropology, which spans the social sciences, the natural sciences and the humanities, is a great choice for the student who wants to be prepared for literally anything, including access to a wider range of graduate school programs than perhaps any other discipline can provide.

As always, *Arts & Sciences* offers a sampling of the innovations and accomplishments that take place throughout the college, from chemistry to cultural arts to a Grammy-nominated recording. I hope you’ll enjoy it, and that you’ll let us know what you think.

Best regards,



David Cordle, Dean

College of Arts and Sciences



UNCW/MONCRIEF



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# Arts & Sciences

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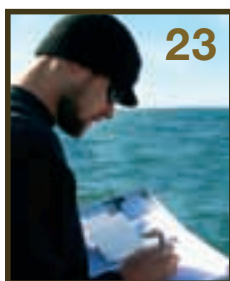
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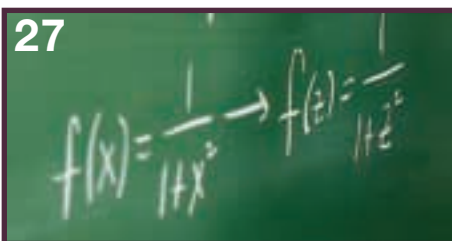
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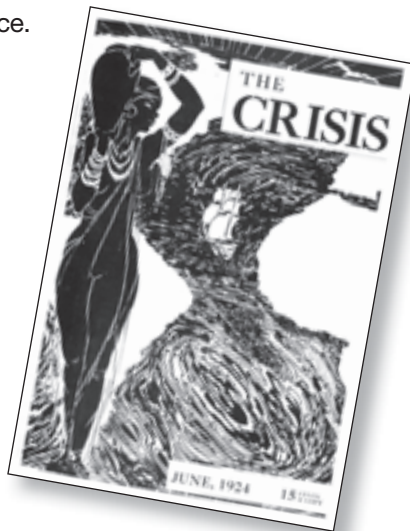
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James Benishoff

## One Hundred Years of Crisis: a book of anticipated significance

Amy Helene Kirschke's *One Hundred Years of Crisis: Centennial Reflections on the NAACP, Its Magazine and Its Place in American History* is the story of *The Crisis*, the official magazine of the NAACP, on the occasion of its 100th anniversary. Kirschke and co-editor Phillip Luke Sinitiere will explore the magazine's historic use of image, text, spiritual and moral material to evidence the African American experience.



From the first issue published by W.E.B. DuBois in November 1910, *The Crisis* has sought to record the immorality of racial prejudice and to stand for the highest ideals of American democracy. In 1911, the magazine supported women's suffrage and today continues its tradition of upholding human rights.

"In 2010, we hope to see *The Crisis* receive the recognition it deserves as one of the major Black periodicals of the 20th century," Kirschke says. Flinching from nothing, DuBois exposed hatred and violence by *showing* it. Through his choice of honest, if difficult, images and stories, he gave the world a magazine whose moral educational significance is without equal, Kirschke says.

Sinitiere will explore DuBois' fiction and religious writing for *The Crisis*. Historian Jon R. Wilson will draw from the NAACP papers. The editors will strike a balance between the work of established scholars and younger academics.

Kirschke has a second upcoming book titled *Common Hope, Common Sorrow: Women Artists of the Harlem Renaissance*. She is also the author of *Aaron Douglas: Art, Race and the Harlem Renaissance* and *Art in Crisis: W.E.B. DuBois and the Struggle for African American Identity and Memory*.

"It is the unpleasant task, the hard lesson, the bitter experience that often leads to knowledge and power and good."  
— W.E.B. DuBois

## UNCW Responds to HAITI

On Jan. 12, a 7.0 magnitude earthquake devastated Haiti. Eleven days later, ImageCat Ltd., a contractor for the World Bank, asked UNCW associate professor of geography Joanne Halls to do a much-needed geographic information system (GIS) rapid damage assessment of Haiti's capital Port-au-Prince and Léogâne, the city closest to the earthquake's epicenter.

The goal of rapid damage assessment is to do the most good with the fewest, most accurate resources in the least amount of time. According to Halls, the phase one damage assessment "consisted of downloading satellite imagery, interpreting current and historical photography, digitizing the footprints of damaged buildings and ranking the degree of damage."

In addition to Halls, the quick response call involved UNCW undergraduate geography student Kaitlyn Costin '10 and alumnus Brent Gore '09, who worked long hours over several days with more than 100 other volunteers.

The work resulted in the mapping of 1,100 square miles of the primary areas affected by the earthquake – providing documentary evidence of more than 60,000 destroyed or heavily damaged buildings.

The information and data was shared with the European Joint Research Commission to create a comprehensive atlas of the damage.

See page 14 for information on the minor offered in geospatial technologies by the Department of Geography and Geology.

# Strength-Based Social Work

By William Davis '08 M.A.

UNCW's Department of Social Work has made a name for itself by embracing a revolutionary clinical approach known as strengths-based practice, which concentrates on individuals' inherent strengths to build resiliency and empower effectiveness.

According to department chair Reggie York, "The strengths perspective is the conceptual foundation for our practice curriculum at both the undergraduate and graduate levels."

In a strengths-based practice, caseworkers focus on where and when clients do well and how they demonstrate strength in order to build on these qualities and experiences. Traditionally, the field has focused on negatives.

"The main purpose was to look at, identify and repair those defects," says professor Robert Blundo. Caseworkers examined clients' lives to find out what went wrong and what pathologies could be diagnosed.

Using strengths-based assessments, social workers and clients work together, building hope from strengths that clients already possess. They are encouraged to see what didn't work as a passage between what does work and what might work.

Blundo also incorporates a strengths-based approach to teaching, emphasizing the mastery of material over a traditional lecture and test model. He credits this emphasis on learning – in combination with the concentration on client interaction – as part of the reason that Master of Social Work students have had such success with the Licensed Clinical Social Worker exam. One hundred percent of the first cohort of students to take the exam passed; the nationwide pass rate is 60 to 70 percent.

Blundo also originated the Strengths/Resiliency-based Practice, Research and Training Collaborative that today includes university faculty from NC State, University of Georgia and 10 other institutions, as well as association members in the U.S., Australia, Asia and Europe.



# New Community Health Education Major

By Laura McHale '06, '10 M.P.A.

When the UNC Tomorrow Commission said, "UNC should lead in improving the health and wellness of all people and communities in our state," UNC Wilmington responded.

In its Jan. 30, 2008, report, UNCW's Task Force on the Future of Health-Related Programs identified needs for health education programs and for professional education in preventative health for both individuals and communities.

These precedents and a growing interest among UNCW students enrolled in the community health education minor encouraged the Department of Health and Applied Human Sciences to investigate the possibility of offering a B.S. degree in the subject.

Potential candidate pools for the major were identified, including a large number of students with a demonstrated interest in fields of health education such as nutrition, fitness and preventative health.

As designed, the new community health education major is well-suited for students who are excited by the possibility of influencing entire communities – as opposed to just individuals – in healthier living and health promotion. Other students who may fit well with this major may have interests in emerging health fields like global health or nutrition and fitness.

## Future Opportunities

With a B.S. in community health education, students can pursue graduate work in nutrition, health promotion, health education, public health and many other fields.

Nursing students, athletic training majors, communications studies and psychology majors are often among those seeking a double major or minor.



## Producing Chemists

# 1 Graduate at a Time

According to the American Chemical Society (ACS), UNCW ranks among the top 10 colleges and universities in the nation for producing successful Bachelor of Science-prepared chemists. The data, posted Nov. 23, 2009, in *Chemical and Engineering News*, compared the 659 ACS-approved bachelor's degree programs as well as numbers of successful graduate and Ph.D. students.

Within North Carolina, UNCW ranked third in the production of bachelor's-degreed chemists. Only NC State and UNC Chapel Hill graduated more ACS-certified Bachelor of Science degree holders. NC State produced only nine more certified undergraduate chemists than UNCW.

In number of master's-prepared chemists, UNCW was second only to UNC Chapel Hill – producing only six fewer certified M.S.-degreed chemists than Chapel Hill – three times more than NC State.

### The Winning Formula

At UNCW, productive, well-funded chemistry faculty mentor students and include them in research. Researchers at UNCW want to teach and are able to identify promising students in the classroom, invite them into their laboratories and encourage them to apply their learning to current investigations.

"Research is the best training a scientist can receive," says Jimmy Reeves, chair of the Department of Chemistry and Biochemistry. "We're proud that our students have had great success in Ph.D. programs and in industry thanks to the efforts of our remarkable faculty. Our success is due in large part to their outstanding efforts."

Visit UNCW's chemistry department Web site: [www.uncw.edu/chem](http://www.uncw.edu/chem) to learn more.

By Brenda Riegel

## Keeping the Memories Alive



The Rosenwald rural school building program was a major effort to improve the quality of education for African Americans in the early 1900s. In 1912, philanthropist Julius Rosenwald, leader of Sears, Roebuck and Company, set up the Rosenwald Fund with the help of Booker T. Washington to improve instruction during "separate-but-equal" *de jure* segregation.

North Carolina has the most surviving Rosenwald Schools, and Pender County has some of the best preserved. On Nov. 13, UNCW hosted the Rosenwald School History Awareness Conference that drew more than 100 Rosenwald School alumni and their families, as well as historic preservation experts, university faculty and students and other educators. Paul Townend, chair of the Department of History, believes the conference will provide momentum to preserve the surviving schools and their history.

Townend credits the "vision and energy" of Claudia Stack, an educator committed to the preservation of Rosenwald Schools and their legacy, for inspiring the conference. Stack became interested in Rosenwald Schools when she was working at UNCW planning the university's *Brown v. Board of Education* 50th anniversary celebration.

Discussions at the conference centered on preserving the remaining structures and on their historic importance, as well as how to share and apply the lessons learned from the schools.

UNCW's location, rich with surviving schools, makes Randall Library an ideal site for a Rosenwald Schools archive.

Jerry Parnell, special collections librarian, began gathering items for the archive at the conference.

"We are accepting donations of documents related to the schools or scanning and returning them if the owners are not ready to part with them," says Sue Cody, interim university librarian. Because the archive will be digitized, it will be quickly and easily accessible to scholars and others.

"We have other collections that will complement this collection, such as the Hubert Eaton archive and the collection of oral history from the former Williston Senior High School," Cody says. Williston was established before the Rosenwald project but received funding from it for an addition.

Additionally, UNCW's Upperman African American Cultural Center offers Rosenwald resources to the community.

The conference was funded by a grant from the National Trust for Historic Preservation and support from UNCW Public Service and Continuing Studies, Upperman African American Cultural Center, the Department of History and Randall Library.



Carrie Newkirk, Mary Faison, William Jordan and Augusta Johnson talk about their lives when they were students at area Rosenwald schools. UNC Wilmington hosted a regional conference on Nov. 13, 2009.

UNCW/MONCREF

When Chancellor Rosemary DePaolo commissioned the UNCW Office of Cultural Arts in July 2005, who would have imagined that in less than five years it would attain national prominence?



Courtney Reilly, assistant director of Cultural Arts (center), Brenda Wheat, assistant professor and arts integration specialist with the UNCW Watson School of Education (left), and Georgeann Haas, supervisor for the arts in New Hanover County Schools (right), will attend the Kennedy Center Partners in Education Institute May 5-8.

## the CULTURAL ARTS

Kim Proukou '06 M.A.

Director Norman Bemelmans, Assistant Director Courtney Reilly and Tech Director Tara Noland not only attract world-renowned artists to Kenan Auditorium; they also place cultural arts at the service of education across the curriculum, from K-12 to pre-service teacher education to professional teacher development.

### **Kennedy Center Invites UNCW Cultural Arts to a New Partnership**

In December 2009, the John F. Kennedy Center for the Performing Arts announced that Reilly, along with Brenda Wheat, arts integration specialist Watson School of Education (WSE), and Georgeann Haas, New Hanover County Schools (NHCS) arts education supervisor, were one of 14 teams nationwide chosen to attend the annual Kennedy Center Partners in Education Institute in Washington, D.C.

In the announcement-invitation, the Kennedy Center acknowledged, "This acceptance is recognition of the quality of your work as well as your potential to develop or expand professional development programs for teachers."

At the institute, Reilly, Wheat and Haas will demonstrate not only the successful efforts that led to their selection but will learn how to take their programs farther.

Photography by Jamie Moncrief

## A Record of Outreach

Nearly every performer, director or speaker that the Office of Cultural Arts books can expect to be invited by Bemelmans or Reilly to become an apostle of the arts to the region – especially in education.

“Most arts organizations might have artists perform, but we use them as educational resources as well,” Reilly says.

The Office of Cultural Arts will send approximately 55 professional artists and educators to area schools to implement arts integration activities designed to support curriculum goals within the North Carolina Standard Course of Study this academic year.

“Using arts programs to reach students is an approach that is expected to enhance the learning experience for New Hanover County students,” says Haas.



university of north carolina wilmington  
ARTS IN EDUCATION ALLIANCE

The UNCW Arts in Education Alliance is a partnership between the Office of Cultural Arts, WSE and the WSE Professional Development System that includes 12 partner school districts in Southeastern North Carolina.

Providing live performances for K-12 students, professional development for teachers and curriculum support, as well as artist-in-residency experiences, the ARTworks program is designed particularly for elementary students.

On Feb. 15, WSE and College of Arts and Sciences faculty presented a professional development workshop for second- and third-grade classroom art and music teachers from New Hanover and Pender Counties arranged through the Office of Cultural Arts. The workshop was designed to help teachers prepare their students for a live performance of Englebert Humperdinck's opera *Hansel and Gretel* – shortened and in English for elementary students – at Kenan Auditorium.

Music faculty Nancy King, theatre faculty Mark Sorensen and Wheat reinforced understanding of story structure, plot and sequence for teachers – incorporating the drama, music and art of opera with curriculum goals and suggested activities.

Melanie Conner, an art teacher at Snipes Academy of Arts and Design who is finishing her teaching certificate at Watson School of Education, attended a breakout session led by Sorensen.

Conner believes every student benefits from experience with the arts because it is “experiential learning.” She says, “A piece of art work, singing a song, a dance – it’s not a test score that marks them – it’s your own expression.”

Because of this quality, Connor says the arts encourage self-respect.

The self-respect that Conner sees developing in her students exposed to the arts provides the confidence to try new things, seize new opportunities and learn: demonstrating indeed that ARTworks.



## Tapping the Next Generation of Theatre Professionals

When the Office of Cultural Arts asked drama teachers, “What do you need to create better performances?” Schools responded, “technical assistance and equipment.” And so, the Technical Assistance Program for Public Schools (TAPPS) was born.

TAPPS provides on-site consultation, training and assistance for drama teachers, while encouraging middle and high school students to learn technical staging and appreciate performance art.

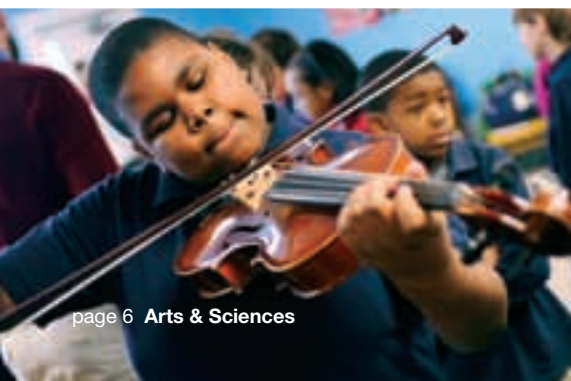
Haas, Bemelmans, Reilly and Noland developed accredited workshops so teachers could make school performances as professional as possible while they earned continuing education credits in technical theatre.

The success with teachers inspired a program for students. With Haas and New Hanover County School's middle and high school drama teachers, Noland developed opportunities for county students to learn staging that have evolved into mentorships for high school students at Kenan Auditorium.

Not only were students “really professional in their attitude,” Noland says, “The experience increased their love of theatre.”

## Lights!

“Lighting is so important,” Noland says, but a survey of equipment found adequate lighting wanting in nearly all schools. In one school, ceiling lights were set too far to the rear. Finding “it was easier and cheaper





to move the stage,” Noland did. Researching codes and compliances and with volunteer help, the stage was repositioned in 4-by-8 sections to be compatible.

During a teacher workshop, Noland showed county drama teachers how to build “light trees” made of pipe for the purpose of creating sidelight.

“Then we showed them how to create mood and ambiance by lighting a shadow at one side of the face or another and how that lighting changed the scene and the mood,” Noland says.

Lighting and stage set design coax the imagination to belief, enhancing live performance. If the Office of Cultural Arts has its way, no New Hanover or Pender County teen will be without the experience.

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**In addition to ARTworks and TAPPS, the Office of Cultural Arts offers:**

- ***The Masters Series:*** featuring artists and works of cultural and historical significance not usually available to the regional community. Visiting artists often participate in outreach activities as well. Featured artists include Wynton Marsalis, Jessye Norman and the Kronos Quartet.
- ***Artist Residencies:*** connecting artists to the community and fostering appreciation for a particular art form or genre. Resident artists include the Joffrey Ballet, Degas Quartet, The African American Dance Ensemble and Carolina Ballet.
- ***Multidisciplinary Arts Series:*** highlighting a particular theme or artist and connecting UNCW with community organizations. Partners have included Cameron Art Museum, N.C. Council on the Holocaust, Wilmington Symphony, N.C. Symphony, Cape Fear Jazz Society and others.



In the talented hands of Norman Bemelmans (left), Courtney Reilly (right) and Tara Noland (center), the Office of Cultural Arts produces original arts programs that are not only transforming regional education but advancing the academic mission of the university as well.



# Sweetening the Waters:

Flavoring his coffee, associate professor Brooks Avery (right) inspires investigation of the molecular structure of sucralose, and a casual coffee klatch becomes the catalyst for a significant finding.

By Justin Davis '10

## What happens when a group of scientists get together for coffee?

### They raise a lot of questions.

Morning meetings in the Marine and Atmospheric Chemistry Research Laboratory (MACRL) in Dobo Hall usually begin with coffee. Professors Ralph Mead, Jeremy Morgan, G. Brooks Avery Jr. and Robert Kieber were discussing potential research opportunities when Avery raised the first of his customary two packs of Splenda® atop his coffee cup. As science would have it, all eyes converged on the small yellow packet.

"When we watched Dr. Avery pour that pack of Splenda® – the questions started," Mead says.

Avery began to talk about why Splenda®, or sucralose, has no caloric content: "It must mean the bacteria in your gut doesn't break it down."

Morgan suggested, "Receptors in the body are recognizing sucralose as sugar, hence its sweet taste."

Why doesn't the body break sucralose down? What about waste treatment effects? And what happens to water and soil when treatment plants release their effluent and sucralose accumulates?

As colleagues quizzed each other about the makeup of sucralose, its effects on the human body and consequent effects on soil and waters, everyone agreed: To the lab!

With a small UNCW Center for Marine Science Pilot Project grant and seed grants from the National Science Foundation and Duke/UNC Oceanographic Consortium, co-principal investigators Mead and Morgan and the team went to work procuring water samples, starting with the Cape Fear River. Back at the lab, graduate student Aleksandra Kirk tested the samples that researchers were gathering.

According to Morgan, "The CMS Pilot Project Grant is an excellent funding source for the initial investigation of a new project. We were fortunate to receive these funds to investigate the presence of human-derived organic contaminants in terrestrial and marine waters."

Mead, Morgan and the team tested and retested samples from different parts of the Cape Fear River identifying wastewater treatment plant effluent as the main source of the sucralose.

Their findings raised more questions: Why was sucralose not breaking down either in the body or in the waters? What potential problems might this resistance to degradation present? What can be done with this information?



**“Since sucralose mimics sugar but has no nutritional value, another one of our concerns is that animal feeding habits could be altered,” Jeremy Morgan says. “The effect of such an event on plant and animal populations is unclear.”**



PHOTO ILLUSTRATION

The team discovered that similar research in Sweden showed sucralose present in waters there. After learning that no research had been done outside of Europe, Mead began to plan for more test sites. “It doesn’t just come from Wilmington,” he says.

Eventually researchers would find the artificial sweetener in the warm waters of the Florida Keys and Miami. “We also found sucralose in the Gulf Stream.” This confirmed that the substance is not broken down easily by the body or in the environment.

Although a good deal is known about the influence of molecular structure on toxicity – much less is known about the role and influence that molecular structure plays in the environmental persistence of a chemical. So, using photochemistry, Mead and the team decided to test the breakdown of sucralose.

There are two types of photodegradation: direct and indirect. In the process of direct photochemistry, a molecule absorbs light, and the light breaks the molecule’s chemical bonds. In the case of indirect photochemistry, something else absorbs

the light, usually water or a metal, and transfers the energy to break the molecular bonds. However, with Splenda® neither of these processes take place.

Kirk says, “It is important to recognize that over 80 percent of this artificial sweetener, which we use every day, ends up back in the environment; less than 10 percent is metabolized in our body and less than 10 percent is removed during wastewater treatment, and its fate is still unknown.”

So far, it appears that sucralose is benign to humans, but what about its persistent effect on plant life at the bottom of these waters? If plant life is affected, could this lead to a change in aquatic life forms that feed on water plants?

Another concern worrying researchers is the possible long-term, chronic environmental effect of the artificial sweetener. “Not all wastewater treatment plants can afford the costs of getting rid of Splenda® before it gets dumped into surrounding waters. Sucralose gets through because treatment strategies have not been designed as yet to remove it,” says Mead.

“We are a nation that uses a lot of synthetic compounds,” Mead says, “but we must have clean water. Understanding the currents, movements and disposing habits in water environments will help us assess the impact.”

The U.S. Environmental Protection Agency does not regulate Pharmaceutical Personal Care Products, a class of products that includes over-the-counter drugs, prescription pharmaceuticals, cosmetics and artificial sweeteners like Splenda®. While sucralose is still found to be benign to humans, in the environment large amounts of any synthetic compound can have unforeseen consequences.

“Are we testing for the right things?” Mead asks. “Carbon dioxide (CO<sub>2</sub>) was found to be a key player in global warming. DDT insecticide and its degradation products were used until it was found to be responsible for placing bald eagles on the brink of extinction – DDT has a similar chemical structure to sucralose.”

With this history in mind, the researchers considered all the possibilities. Sucralose could be harmless, but then again, perhaps not, and it could be making things much worse for future generations.

Avery, Mead and Skrabal also see a possible positive use for Splenda® – perhaps as a tracer for ocean water currents. “This could help the oceanographic community better understand ocean circulation, which is critical to understanding climate change,” Avery says.



Lead author Ralph Mead (center) with the study's co-authors: (L to R) Aleksandra Kirk, Stephen Skrabal, Brooks Avery, Jeremy Morgan, Robert Kieber and Joan Willey.



Near the Gulf Stream, Jeremy Morgan collects water samples using a CDT (Conductivity, Temperature and Depth) Rosette.



## Testing

Analyzing samples from both the Northside and Southside Wilmington wastewater treatment plants, Kirk determined that each year almost a short ton (907 kg) of sucralose is released into Wilmington waters. "Northside discharges around 7.44 million gallons per day (MGD) of effluent, giving out about 1.13 kg of sucralose per day. Southside discharges 8.00 MGD, passing about 1.30 kg of sucralose into Cape Fear waters per day."

Kirk also tested water in UNCW drinking fountains, but found no sucralose traces present. "It could be below our detection level," Mead says. "The upper Cape Fear, where drinking water comes from, does have detectable sucralose present."

## Publication

Mead, Morgan, Avery, Kieber, Kirk, Stephen A. Skrabal and Joan D. Willey are co-authors of "Occurrence of the artificial sweetener sucralose in coastal and marine waters of the United States," presented in the journal *Marine Chemistry* (19 September 2009).

*Marine Chemistry* is a leading international journal publishing original studies in the field of chemistry in the marine environment. According to the editors, "The data they presented suggest the persistence and widespread distribution of sucralose in natural aquatic matrices with subsequent incorporation into a major oceanographic current, the Gulf Stream, where global distribution may take place."

## MACRL

Mead, Morgan, Avery, Kieber, Kirk, Skrabal, and Willey are part of the laboratory group, MACRL, the Marine and Atmospheric Chemistry Research Laboratory, located within the Department of Chemistry and Biochemistry at UNC Wilmington.

During the past decade, MACRL has attracted approximately \$4 million in federal funding for research projects resulting in more than 50 publications and providing research training and mentoring for nine postdoctoral fellows, two Ph.D. students, 45 master degree students and more than 100 undergraduate degree students.

MACRL researchers study:

- the potential impacts of global warming and sea level rise
- trace metal speciation in estuarine and atmospheric waters
- photochemically mediated processes that impact environmental systems
- the environmental occurrence and fate of pharmaceutical and personal care products in the marine environment.



Justin Davis '10 will graduate with a B.S. in chemistry, a minor in English and a professional writing certificate. Davis is from Jacksonville, N.C. At UNCW, he participated in the Residence Hall Association, a student organization dedicated to improving the quality of on-campus living through leadership, service and environmental stewardship. Davis is thinking about a career as a science writer.



## Graduate Student Research

Aleksandra Monika Kirk is a co-author of the paper "Occurrence of the artificial sweetener sucralose in coastal and marine waters of the United States," which is also the title of her master's thesis.

The paper ultimately substantiates that sucralose, or Splenda®, is present in marine and coastal waters of North America in significant concentrations.

Currently, Kirk is determining the extent of photodegradation of sucralose.

"Aleksandra is the reason why this project has been successful to date," Mead says. "She is a very good researcher and without her enthusiasm and perseverance this project would still only be a dream. She ran with the idea and made it work."

"Since we published our findings in *Marine Chemistry*," Kirk says, "I was given the opportunity to speak at the American Chemical Society conference in Washington, D.C., to share our results with the scientific community."

A military spouse, Kirk will be relocating to Okinawa, Japan, with her husband after she receives her master's degree in December 2010.

Kirk is confident "the excellent education and experience" she is getting at UNCW will enable her to continue her research in Japan.





# Hot Spots: Geography

by Andrea Weaver

*Shift the swaying river's shift,  
Oceans fall and mountains drift – R.E.M.*





# and Geology

JONATHAN HAWES



Dynamic change defines our Earth, molding every hill and valley, shaping every crack and crevice, leaving no stone unturned. A timeless journal, our world's topography records stories, from moment-to-moment shifts all the way back to deep time, when our planet first formed.

To discover and decode Earth's stories requires vision, deep curiosity and intense interest in understanding the forces at work on this giant rock we call home. How do wind and water, temperature and time – and various forms of pressure – simultaneously create and threaten land and lives? What can – or should – humankind do about these changes?

## **Two sciences form the core of exploration into answering these questions: geography and geology.**

"You like the land? You like the seas? You like technology? You like rocks? You like to travel? Whatever you like, we've got something for you," says Lynn Leonard, chair of the University of North Carolina Wilmington Department of Geography and Geology.

To cultivate future earth scientists, UNCW's geography and geology department has taken a line from Earth's storybook – renewing its programs by reshaping them.

## **Major change, minor addition, more choices**

In fall 2010, a new major in geosciences, revised majors in geology and a new minor in geospatial technologies will debut. The changes reflect national trends in the geosciences and focus on the knowledge, skills and abilities required by potential employers and graduate school programs.

A new bachelor of arts (B.A.) degree in geosciences grounds students in the fundamentals: the makeup and behavior of the solids and the liquids and gases that comprise our planet. The new program enriches students' awareness of the earth with classes that focus on weather, climate and the ocean. Leonard says, "Our new B.A. is ideal for the student who truly wants a liberal arts education and has an interest in the Earth and how it works."

Students who want a bachelor of science (B.S.) degree will be able to consider two options: an academic track or a professional one. Both emphasize thorough knowledge of rocks and minerals and their formation, but each tailors course selections to students' plans following graduation.





**Chris Buford '10 M.S., shown here conducting mapping research, remembers summer field course: "I loved every minute of it – being outside, working with the rocks, putting what you learned in class to use. I didn't want to leave. You spend hours in the field, studying rocks, drawing maps, writing reports and making presentations."**

Want to attend graduate school and eventually pursue a Ph.D.? Take the academic track. Want to begin working in the energy, environmental or other geologic industries after commencement? Follow the professional track: an option that works well for students who want to pursue licensure as a professional geologist. Licensure is a career advantage for work in private industry and/or consulting.

"All students need a foundation in rock types, rock formation and mapping," says Dave Blake, associate professor of geology. "Once they understand Earth's history, they can learn more about minerals and how to use them, about fossil fuels and how to explore for them, and about water and how to manage water resources."

The department's B.A. in geography also offers students many options. Interested in the Earth's characteristics, how it has evolved over time, and how environmental changes are affecting it? Follow the physical geography track. Want to study cultural landscapes and humankind's interactions with the Earth? Study human geography. Thinking about a career in planning or geographic information systems? Consider applied geography.

The department also has created a new minor in geospatial technologies that enables students to use computer software to map and interpret data. The minor builds on the success of the department's certificate program in geographic information science (GISci) and capitalizes on the current governmental and industrial demand for well-prepared practitioners.

"The GISci job market is strong," says Joanne Halls, associate professor of geography. "Our new minor gives students a real flavor for all the possibilities out there. It is a challenging combination of geography, geology and computer science that broadens the curriculum. For students who love mapping, being outside and working with computers, this is a great program."

Using satellite imagery and other technological tools, such as Google Earth™, GISci students learn how to synthesize and interpret data about land use, economic development,

environmental protection, governmental service areas and population. Open to all majors, the geospatial technology minor is an appealing option for students in other fields, including biology, political science, business, computer science, information technology and anthropology.





**“I want them to realize there  
is a difference between  
looking and seeing.” — Dave Blake**

## More than Meets the Eye

DeLoach Hall, home to geography and geology, is a geode in function if not shape. It is an unassuming container for the multifaceted brilliance of the students and faculty inside. They excel in many diverse disciplines, including climatology, hydrology, cultural and physical geography, geophysics, global information systems, oceanography, sedimentology, paleontology, petrology and plate tectonics. They conduct research as near to campus as Wrightsville Beach and as far away as the South Pacific.

The faculty frequently works with colleagues from departments across campus as well as from many national and international universities and governmental agencies, participating in grant-funded projects that bring prestige and financial resources to the university. Recognized as experts in their fields, the scientists who teach geography and geology at UNCW are down to earth, approachable and supportive.

Hayle McClellan, a senior from Asheboro, N.C., decided to major in physical geography after taking classes in the department. “The professors are there to help you anytime, and I really like the projects we do. You get to apply what you learn to real-world situations.”

*continued pg. 16 – Bound for Belize*

## Rock On: Geology and Geography in the Field

Geology graduate student Chris Buford '10 M.S. (facing page left) says “I really cannot say enough about the learning experience in this department. Being in the field with Dr. Blake (below) as an undergraduate and as a graduate, I have learned so much from him asking me questions. He makes me think things out for myself.”

According to Joanne Halls, geography and geology faculty seek out opportunities to involve students in research. “When I see students who are excelling in class, I approach them about working on a research project and encourage them to come up with an idea. I have found that if it is something they are interested in, they will run with it.”

Hands-on, experiential learning defines geology and geography. What is more tactile than the Earth itself? The department's annual, six-week field course to study geologic wonders is a rite of passage for many students.

The experience crystallized Buford's decision to pursue a master's degree in geology.

“I loved every minute of it – being outside, working with the rocks, putting what you learned in class to use. I didn't want to leave. You spend hours in the field, studying rocks, drawing maps, writing reports and making presentations. Your conditions may be less than ideal. You may be sitting on a bench outside a tent, but you have to produce something that is professional. That's what really makes it worth doing.”

Dave Blake leads the field courses with faculty and students from George Mason University and says the experience teaches far more than mapping skills. By making students observe their surroundings and think things through, field course engages their minds and bodies in the learning process.

“I want them to use their critical thinking skills,” he says. “Geology is about spatial understanding. I want them get the lay of the land. I want them to realize there is a difference between looking and *seeing*.”



**“Geologists are Earth's historians”  
— Dave Blake**

## Bound for Belize

McClellan learned the lay of a new land last summer as an intern at Monkey Bay Wildlife Sanctuary, a 1,070-acre land conservation and sustainable living technology center in Belize that specializes in hosting study abroad tour groups. She led eco-tour groups exploring pine forests, caves with Mayan artifacts, the Sibun River watershed, a snorkelers' paradise called Tobacco Caye and the Rio Blanco falls, which she says is "now probably my favorite place on Earth."

McClellan admits that the experience required adjustments on her part. "When I first got there, the electricity was kind of haphazard. There are no hot showers, no flushing toilets, none of that sort of thing. All of the water used at the sanctuary is runoff rainwater. At first, I was put off by it, but as I got to know the people, I loved it. By the end of the internship, I never wanted to leave."

Elizabeth Hines, associate professor of geography, helped McClellan set up a directed independent study project and, in the process, discovered that she wanted to learn more about Belize.

Visiting the Central American country while McClellan was there, Hines says, "I was really surprised by what I discovered in terms of physical and cultural diversity. The more Hayle learned about Monkey Bay and Belize, the more I realized this would be a wonderful opportunity for other students."

"My perspective in my teaching and research has been broadened by my experiences traveling, locally and abroad," Hines says. "There's nothing to compare with what a place smells like, sounds like and looks like. You have to feel it on your skin and see real people who are living in the culture. It's a small world, and in this department, we want students to go and see."

## Lessons from the Past

Along Portugal's coastline, associate professor of geography Michael Benedetti explores the connection between sea level changes and the struggle for survival of the Neanderthals.

Neanderthals, hominids from the Middle Paleolithic period, lived in parts of Europe from about 200,000 to 30,000 years ago, although the specific timeframe of their demise is debated. Many scientists believe climate change played a significant role in their eventual extinction, making this study very relevant to modern world environmental concerns.

Benedetti's research involves geographers, geologists, paleontologists, biologists and anthropologists from the universities of Louisville, Denver, Wyoming, Illinois at Chicago and Louisiana State as well as a Portuguese institution. Grants from the National Science Foundation support the work.

"It's a great interdisciplinary project. We have found three or four archaeological sites that prove Neanderthals lived on

or near beaches when there were major sea level changes and dramatic climate changes," Benedetti says. "The changes they experienced were much greater than those we face now. The temperatures they faced went from glacial to warmer than today and moved back and forth during their era. What happens when sea level rises one centimeter per year? What happens when the ocean warms up so much that certain species can't grow in the barrier marshes anymore? What happens when a deciduous forest turns into a desert steppe?"

Benedetti and his colleagues search for clues hidden along Portugal's central coast. Analyses of pollen particles found in former peat bogs, or wetlands, reveal characteristics about the plants that once grew there. Tools and stone flakes found in sandy areas offer evidence about the ways Neanderthals interacted with their world. Caves yield discoveries about how Middle Paleolithic hominids lived.

Because escalating climate change is a modern problem, too, Benedetti draws an





analogy between the Neanderthals' time and our own. "We need to know how they responded to their conditions. Do the adaptations of these Paleolithic peoples really have anything to teach us about how we adapt to our challenges? Our world is very different from theirs, but we still depend on the productivity of the ocean and the stability of our soils to survive."

Modern humans face a significant factor that was absent during the Neanderthals' time – our own impact on the environment.

Rock-solid careers in geography and geology await those willing to dig deeper for solutions. A new synergy exists between the discoveries technology makes possible and public interest in reducing resource depletion, increasing pollution prevention and improving environmental stewardship.

"If you like field experience, hands-on research and opportunities to work with people in other disciplines, then our programs are for you, because everything happens on the Earth," Benedetti says. "It is all geography and geology."

**Rock-solid careers in geography and geology await those willing to dig deeper for solutions.**

JONATHAN HAWES

Amanda Williams '09 M.S. often slips into scuba gear when she suits up for work as a marine science Geographic Information Systems (GIS) analyst with the Khaled bin Sultan Living Oceans Foundation in Landover, Md., near Washington, D.C. Diving expeditions give Williams a first-hand opportunity to survey the regions where the Living Oceans Foundation conducts research. This year, she will travel to the Bahamas, Cayman Islands, Bonaire and Puerto Rico, using her knowledge and expertise in GIS to produce detailed maps of the ocean.

## Where They Are Now

Amanda Williams '09 M.S.: Scientist Without Borders

"In addition to making maps, I compile, edit and analyze marine geographic data," Williams says. "For example, I can overlay benthic (seafloor) structure with bathymetry (depth) to show how the shape of the ocean floor is related to the corals that live on it. I can also overlay sea surface temperature data with our surveys to identify potential areas of coral bleaching or to understand why we may have seen bleaching during a survey."

Williams is developing a GIS data portal that will enable the foundation to better share its scientific findings. Some additional responsibilities include updating the Web site and editing high definition video of research expeditions.

While a UNCW graduate student in marine science, Williams studied geographic information science in the Department of Geography and Geology with Joanne Halls, associate professor of geography. "Dr. Halls helped to improve my GIS skills by teaching me how to analyze geographic data against other variables: distance from shore, depth and topography of the island for run-off," she says.

Williams' graduate thesis research was conducted in the Philippines. "I had the opportunity to work independently abroad, and I became a much better scientist by learning from both my mistakes and successes. I hope to eventually go on for a Ph.D., and I know I am prepared to do so, based on my learning experiences at UNCW."

"The founder of the Living Oceans Foundation, His Royal Highness Prince Khaled bin Sultan of Saudi Arabia, created the notion of Science Without Borders® to encourage scientists around the world to collaborate in ocean research," Williams says. "We are kicking off our Global Reef Expedition in 2011 with research in the Caribbean, conducting coral reef resilience surveys in tropical coral reef locations around the world for the next four years. One of the goals of the Global Reef Expedition is to aid countries in mapping baseline data for reefs that they do not have the resources to study." See [www.livingoceansfoundation.org](http://www.livingoceansfoundation.org).

by Andrea Weaver







# PHILOSOPHY & Religion



## While still the domain of the intellectually elite, the philosopher's circle of influence affects everyone.

by William Davis '08 M.A.

Today's discussions of human rights, popular culture, education – ethical issues raised by the human genome project – even vaccinations, raise questions that require understanding of the discipline of philosophy by all citizens.

Philosophers deal with relationships between ideas, but also between individuals and groups. Whatever affects living beings – the experience of reality and the meaning of existence – is of interest to the philosopher.

### One Philosopher's Journey

UNCW professor Candace Gauthier teaches bioethics, a discipline that deals with ethical questions resulting from advances in medicine and biology. An increasing number of students from nursing and biological sciences seek her courses.

Gauthier began her graduate studies at UNC Chapel Hill in the 1970s loving philosophy and wanting to put it to use by making a difference in the lives of real people in the real world. Soon, ethical issues in medicine and science and law – such as the landmark Karen Quinlan case of 1976 – would present dilemmas in patient care related to medical advances that would settle her direction.

She began with one of the oldest principles from Hippocrates, the Greek physician: "Do no harm." To better understand the boundaries between help and harm, Gauthier began working with Southeastern North Carolina's hospitals to develop ethics committees. Today, she serves with medical residents, doctors and hospital staff constructing ethical guidelines to support families and medical professionals in making difficult decisions. The work answers her passion for philosophical application.

Her career-long focus has run point by point along the developing lines of bioethics, a category in applied philosophy where Gauthier has been influential. "I've got one foot in the hospital and one foot in the school," she says.

### Finding a Job

Instruction in logic and reasoning is required of all philosophy students. Analyzing arguments, students learn to critically examine the ideas of others.

"For some, an education in logic means that they are never the same again, having come to an understanding of the highest standards of clear, coherent thought and its expression," says associate professor of philosophy and religion Patricia Turrisi.

Philosophy attracts a large number of double majors and minors. Physics and other science majors appreciate its structured arguments. Film studies, psychology and business majors enjoy the insights they gain by thinking philosophically.

Conventional wisdom says that people do not major in philosophy to get a job; however, challenging conventional wisdom is part of a philosopher's job. Still, in the midst of a recession, the question remains: "what will you do with a degree in philosophy?"

For most humanities majors, teaching positions – as professors – can be scarce. "The job market in terms of general education is highly competitive," says Turrisi.

Early on, faculty members help students identify careers where they can apply their education. From law to computers to medicine, UNCW philosophy majors have successfully pursued a wide variety of careers. "They're really prepared to do what we hope they will do: apply their reasoning to another end," Turrisi says.

Today's sophisticated fields and specialties require higher order thinking skills, and a bachelor's degree in philosophy is a compelling calling card to leave at the door of most graduate schools. Philosophy majors enjoy one of the highest acceptance rates at law schools, and UNCW offers a valuable legal internship program. Turrisi notes that many students who go through the department as majors, minors – or just taking classes, "tend to end up in public service."



UNCW/MONCRIEF

## Where They Are Now: Medical School

Ian Sheffer '07 (left) graduated from UNCW with a Bachelor of Science degree in biology and a Bachelor of Arts degree in philosophy and religion. Today, he is a third-year medical student at Temple University and a part-time student in the Master of Bioethics Program, an interdisciplinary graduate degree offered by the renowned Penn Center for Bioethics at the University of Pennsylvania.

Sheffer credits the UNCW philosophy department with preparing him well for medical school.

"Though biology and the sciences are certainly necessary to understand how the human body functions, training in philosophy has helped me understand things about the human condition, and in turn my patients, that no science class ever could."

"From things one would expect to come in handy in medicine, like Dr. Gauthier's bioethics classes and my honors thesis on physician-assisted suicide to things that one wouldn't expect – such as the insight into a variety of religions gained from Dr. Herb Berg's class on the Abrahamic faiths that has allowed me to comfortably interact with patients from various traditions."

Sheffer says, "My degree in philosophy has, indeed, given me the perspective necessary to look for deeper meanings – not only in my own experiences in medicine, but in the experiences of my patients and their families."

### Philosophy faculty expertise:

Ferenc Altrichter, logic, metaphysics

Matthew Eshleman, philosophy, history

Candace C. Gauthier, ethics, medical ethics and media ethics

Don A. Habibi, social and political philosophy

Scott James, philosophy and ethics

W. Thomas Schmid, ancient and medieval philosophy

Patricia A. Turrisi, philosophy of science, American philosophy

Heath White, philosophy



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While modern social networking may not normally be associated with higher order thinking, forward-looking chair George Zervos and others see it in the tradition of the symposia of ancient Greece and intellectual salons of 17th century France. Connection to a living community where ideas and future directions are shared "is a traditional staple among philosophers in higher education," says associate professor Patricia Turrisi, and "Facebook is an electronically connected living community."



# Why Study Religion?

By Kim Proukou '06 M.A.

"People will be better informed Americans if they understand their history and its religious contexts," says associate professor of religion Diana Pasulka (left). And people are agreeing.

In December 2009, researchers at Penn State published results of an analysis of "more than 5.5 million searches from three Web search engines over eight years," ...finding "a general increase in religious searching over time."

Robert B. Townsend, assistant director of the American Historical Association (AHA), reports a growing trend in numbers of university faculty nationwide specializing in religion. In the online article, *A Newfound Religion? The Field Surges Among AHA Members*, published in *News – Perspectives on History* by the AHA, Townsend writes, "Specialists in the field of religion recently surpassed all other topical categories in our annual look at AHA members." Young faculty, in particular, are being attracted to the specialty.

## Religion Is Hot, but Who's Minding the Fire?

In the same article, Yale University professor of history Jon Butler suggests, "Historians realize that the world is aflame with faith, yet our traditional ways of dealing with modern history especially can't explain how or why."

If, indeed, the world is "aflame with faith," who is minding the fire? For the past 20 years, the subject of religion has been taboo in public life and education. Many historians believe the prohibition has made us a nation of "religious illiterates" at a time when ignorance of religion – one's own as well as other's – could seriously affect global understanding and world peace.\*

*\*New Found Religion? The Field Surges among AHA Members* <http://www.historians.org/perspectives/issues/2009/0912/0912new3.cfm>

J. J. Knight '11 contributed to this article

## Religious Literacy and Historical Lessons

Based on her work with students, Pasulka says, "There is a lack of American history knowledge, and an accompanying lack of knowledge about religion." The United States Department of Education agrees.

Grants authored by Pasulka and funded by the U.S. Dept. of Education now total \$1.6 million. An original grant of \$967,823 awarded in 2009 to Pender County Schools and the University of North Carolina Wilmington was so successful that both its funding and scope were expanded.

New partners include New Hanover County Schools, Brunswick County Schools and the N.C. History Teaching Alliance. Funds currently educate teachers in Brunswick, New Hanover and Pender counties about American and North Carolina history – including religious and cultural history.

The grant encourages collaboration with scholars, religious leaders and community organizations and promotes onsite programming at national historic sites, museums, churches and community centers.

"The government was convinced of the need for a greater emphasis on historical literacy through methods that increase content knowledge," Pasulka says. The grant-funded projects, field trips and applied learning experiences address the students' lack of ability to read, write and understand the full American story: including its religious history.

Yet, the study of religion is not without controversy.

"A lot of issues with religious literacy stem from the idea that religious books cannot be taught without promoting them," Pasulka says. "People

are afraid that if you teach kids about the Koran (Qur'an) they will become Muslim, or if you teach them about a Buddhist text they will become Buddhist. But, that's not true. What we are doing is teaching students about how important religious texts are to understanding culture."

## UNCW Studies Religion

Religion majors make comparative studies and combine research methods from archeology, history, literature and anthropology to understand diverse religions and religious cultures.

Abrahamic religions professor Herbert Berg

encourages students to see wider contexts. For example, the conflict in Israel and Palestine and the War on Terror are often depicted as Jewish-Muslim and Muslim-Christian conflicts. "Yet, these faiths have as much in common as they do differences," Berg says. "Focusing on the commonalities allows people to

address the historical, political, economic and social issues that can resolve the conflicts."

## Additional faculty and research areas:

Theodore Burgh: Old Testament, religion and music. Burgh, an archeologist, has been excavating with a team in Jordan since 1996. His work focuses on the Iron Age (1200-586 B.C.), a time known as the "biblical period."

Walter H. Conser: American religions and the history of American faith communities

Beverley Foulks: Buddhist studies, Asian languages and civilizations

N. Samuel Murrell: African, African American religions, Caribbean and world religions

George Zervos: Early Christianity, New Testament studies and New Testament Greek (Koine Greek)

**"Much of history is religious history, You cannot separate religion from culture."  
– Diana Pasulka**





# Anthropology:

the study of humankind  
biology, lifeways and behaviors – past and present

By Lindsay Key '11 M.F.A.



## YOU STAND AT THE DOORS OF UNCW THINKING: EVERYONE WHO'S ANYONE IS MAJORING IN MARINE BIOLOGY, BUT YOU'RE NOT SURE IF THAT'S THE PATH CALLING YOU.

Here's the good news: comprehensive universities like UNCW not only position their students for multiple professional choices, but also offer some of the most amazing, diverse learning experiences.

The anthropology degree – a study of the nature of human beings and their work – can prepare you for a range of careers: forensic science, police work, medical and health fields, business, law, publishing, environmental and social impact assessment, historic preservation, nonprofit management, government, international development, museum work, teaching, library work, sales, public relations and more.

And if you're considering graduate school and don't want to take the wrong path, anthropology could be the right path for you. Anthropology's scope fits with many disciplines in both the humanities and sciences.

Walk into the forensic osteology lab in UNCW's Social and Behavioral Sciences Building and you may be reminded of an episode from the crime drama *Bones* – students in gloves bent under fluorescent lighting chipping away at a skull recovered by local and regional law enforcement offices.

Using textbook know-how and practiced expertise, associate professor Midori Albert and her students first seek to identify whether the remains are human or animal.

In the forensic osteology lab, within oversight of professor Midori Albert (background), senior anthropology major Brooke Poli '10 cleans dirt and plant material from a skull found in Columbus County. Here, students assist in forensic cases. In this case, Albert and her students are working on an identity profile for the Columbus County Sheriff's Office. At this point in the forensic evaluation, findings are consistent with characteristics typically found in an adult male.

They look for other clues to determine age, sex and associated trauma. Forensics is within the subfield of biological or physical anthropology.

Yet, forensics is just a fraction of the knowledge that a degree in anthropology offers students. Core skills: critical thinking, interviewing, research and problem solving are marketable anywhere. Albert recommends the degree whole-heartedly to students who knock on her door without a clue as to what they want to do.

"This major really gets you thinking," Albert says. "It's like a movie, you know. Every once in a while a movie comes along that really moves you. It makes you think or feel. One of the things that people might not get about anthropology is that it can offer you that same sort of experience – the feeling that you're doing something meaningful, but that you're still going to have a decent job."

Recent anthropology graduates have gone on to law school, to work in cultural resource management firms, to teach K-12 social studies and to work for international institutions such as the World Bank or in the U.S. at agencies such as the National Institutes of Health.

The education and applied learning experiences that students receive, including internships and study abroad experiences, prepares them for interesting jobs where they can lead and influence change.



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UNCW students at archaeology field school, Lamanai, Belize

For Grayson Greco '09, the opportunity to work at Fort Fisher's underwater archeological laboratory and dive to explore the *Queen Anne's Revenge*, the flagship of legendary pirate Blackbeard, at the bottom of Beaufort Inlet, was a highlight of his undergraduate career.

Public, private and academic interest is high in what may be the most ambitious archaeological inquiry into a shipwreck in North Carolina since the discovery of the Civil War ironclad *USS Monitor*.

"I was working hard," Greco said, "and the opportunity came up. Your skills and exposure increase. You can be in the classroom all day, but when you get out there – it completely changes everything."

From using Autocad software to map underwater artifacts to excavating an ancient whale skull found in the dark, swampy waters of Lake Waccamaw, Greco was exposed to the real work of an underwater archaeologist. During his second internship, completed with the U.S. Department of Agriculture Forest Service in the Croatan National Forest, he explored historic home sites and interviewed descendants of the area's 1934 African American Hillfield community to create a digital documentary. Greco's final ethnography – or scientific description – of the Hillfield community, is an example of the work of a cultural anthropologist.



Assistant professor Bill Alexander's research led him to Chile's Norte Chico region, where he described "the communal solidarity and ingenuity exemplified by the unique community systems" that have successfully adapted to ever-changing environmental, economic and political conditions in the face of adversity over time.

His ethnography, a fieldwork-based description and analysis of a unique rural culture, published in 2008, falls within the scope of cultural anthropology. This type of holistic analysis of cultures – exploring historical and environmental developments – is the kind of work that students also learn to do.

Professor Alexander is working on a medical anthropology project that is looking at the disease burden of tuberculosis among migrant communities along the U.S.-Mexico border. Medical anthropology is a growing subfield within cultural anthropology in which graduates apply anthropological concepts and methodology to critical global health issues.

Anthropology department chair Pat Lerch's research has taken her to Brazil, Barbados and rural North Carolina on topics as diverse as religion, tourism and Native American identity. A passion for travel, for experiencing new scenery and people, is often strong in those who choose anthropology, regardless of which subfield – cultural anthropology and linguistics, physical anthropology or archaeology – they study.



Anthropologist Nora Reber was drawn to anthropology because “there are not many fields that include science, social sciences and humanities, and encourage so many different viewpoints and lines of evidence.”

Each summer, the department offers students the opportunity to pursue field school an intense applied learning experience. Students can journey with anthropology professor Scott Simmons into a jungle near the southern tip of Belize’s Ambergris Caye to search for artifacts pertaining to ancient Mayan tribes. In an on-site laboratory, they analyze their finds: broken pottery, shells, bones and other artifacts to uncover new cultural information.

In summer 2010, Simmons’ “Life in Ancient Britain and Ireland” course will take students to England’s archaeologically rich Stonehenge, Flag Fen, Newgrange and Navan Fort sites. They’ll visit historically comprehensive museums like the British Museum in London and National Museum of Ireland.

Because anthropologists study humans in their environments, international experiences are essential applied learning activities.

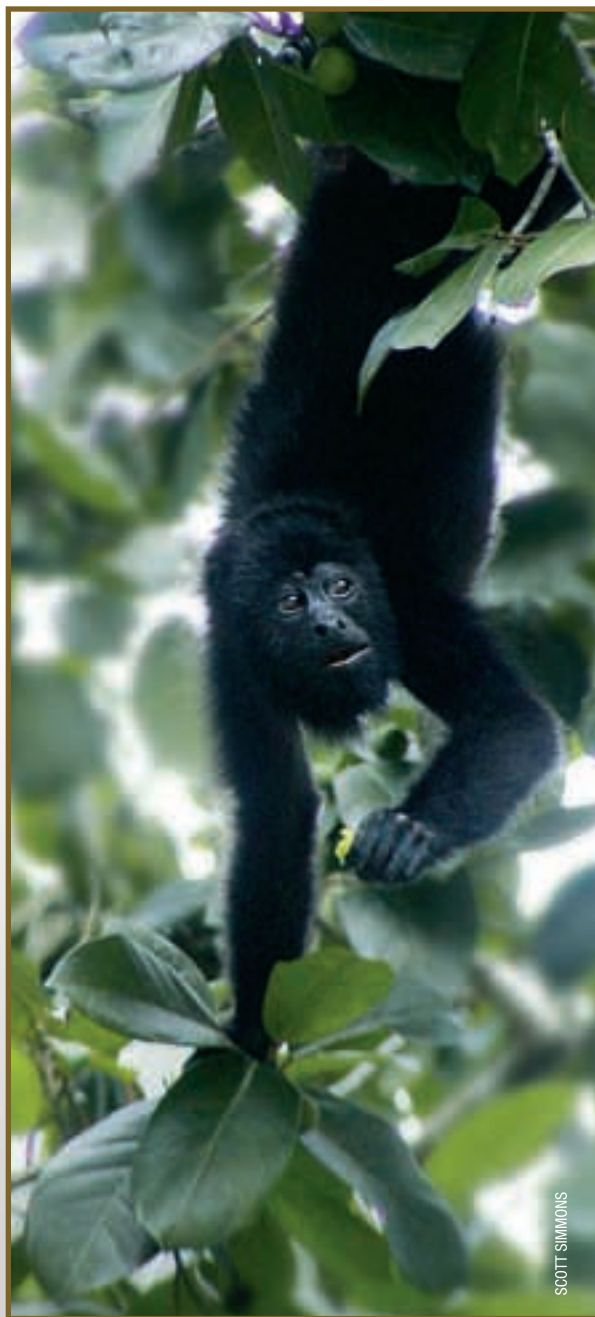
“We try to give our students as many study abroad programs as we can,” Simmons says. “Anthropologists are running all over the world.”

Anthropologists are also trying to make the world a better place. Students and researchers with an interest in applied anthropology use their science to identify solutions to real world problems and typically work for non-academic clients: governments, interest groups, tribal and ethnic associations, development agencies and a wide range of nonprofit organizations.

An applied anthropologist might conduct research to help public health authorities determine how a deadly disease spreads through a certain culture or seek to determine habits contributing to malnutrition and disease.

The degree allows a graduate to land his or her first real job while making a difference – in research and/or applied science. It’s a field for the student who is willing to trade a business suit for time outdoors and for those who are passionate about meeting new people, visiting new places and discovering life-changing facts.

The discipline fits the culture at UNCW as well. According to the Peace Corps’ most recent annual “Top College 2010” list of Peace Corps volunteer-producing colleges and universities, UNCW places 25th in the nation among medium-sized schools – sharing the top 25 ranking with universities known for “improving the world one grad at a time” like George Washington University, University of Notre Dame, Boston College, Yale, Brown, William and Mary and others.



Howler monkey, Belize



# Physics Works

By Kim Proukou '06 M.A.

**From how the universe began to how a cell phone works, everything that moves does so according to the laws and principles of physics. The language of physics is mathematics.**

Compare the computations of physics that represent the world at work to poetry's lines charged with significance and context, and you see why physicists declare the best of these "elegant." Yet, while an aesthetic sense is useful to the physicist, curiosity is indispensable.

Do you see a confocal microscope and wonder *how* it works? Physicists wonder about everything. Interested in discovery, physicists want to explore the unknown as well as what it might take to get there. And, like engineers, they can build just about anything they need.

There are many subfields and specialties in physics, such as superconductivity and particle physics, as well as interdisciplinary fields such as biophysics, geophysics and oceanography. At UNCW, students work and learn alongside faculty in areas as diverse as high-energy physics, ocean dynamics, computer simulations – even a little rocket science.

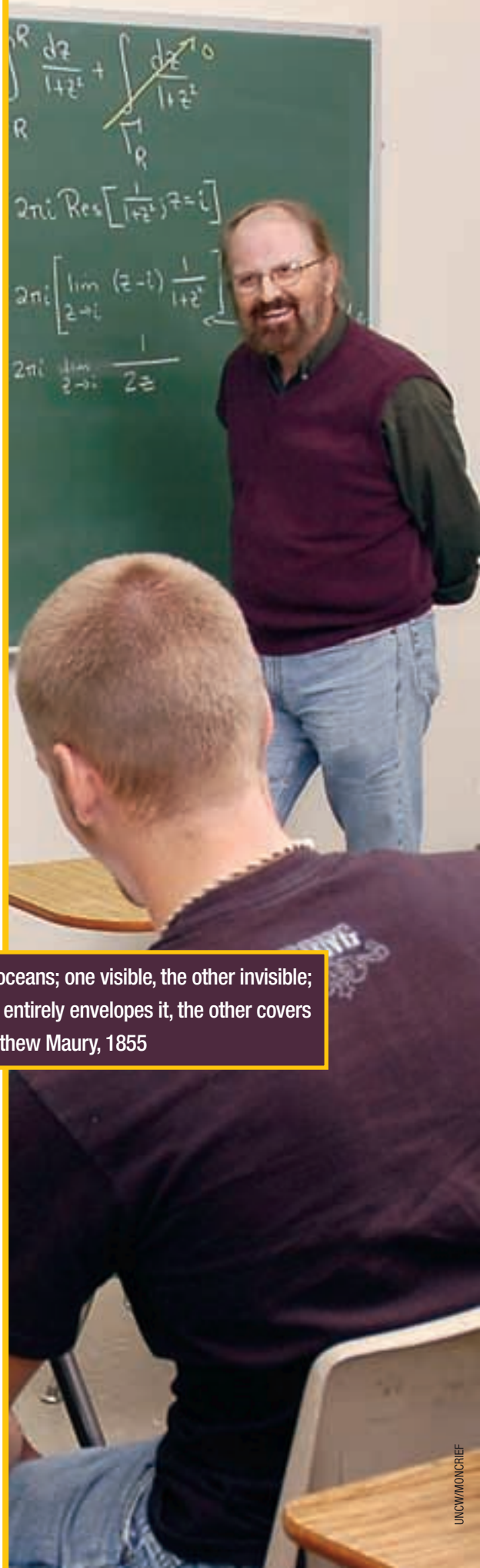
## New Degree Options 2010

For those who want to work in ocean environments, the department has introduced a new Bachelor of Science degree option and minor in physical oceanography designed to prepare students for acceptance into the best graduate schools for oceanographic science. With the master's degree, students can find work in academics, government or industry or continue as Ph.D. candidates. Those who stop with a bachelor's degree may teach or find support roles in oceanographic exploration, industry and research.

**"Our planet is invested with two great oceans; one visible, the other invisible; one underfoot, the other overhead; one entirely envelopes it, the other covers about two thirds of its surface." — Matthew Maury, 1855**

## Identifying and Encouraging Talent

Zachary Williams '10 and Chelsea Hopkins '10, honors students, are investigating physics that drive surf zone fluid flow and shoreline change. They work with assistant professor of physics Dylan McNamara, whose research interests include complexity theory and coastal physical oceanography.



*“The primary advantage of a school offering undergraduate programs in oceanography is the fact that you do not have to wait for four years to satisfy your desire to immerse yourself in the subject.”*

— Leslie K. Rosenfeld\*



Zachary Williams '10



Professor Dylan McNamara and Chelsea Hopkins '10

UNCW/MONCREEF

“The physics of sand moving around and humans moving sand around,” McNamara says, make the study of shoreline surf zones “complicated and interdisciplinary.” Under his direction, Williams and Hopkins learned to create numerical computer models that capture the-whole-not-equal-to-the-sum-of-its-parts nature of this active environment.

Williams transferred from Montgomery College in Maryland as a music major and took physics 101 to fulfill basic studies requirements. “I liked physics and decided to give it a try. When I came here, there wasn’t that much of a push for physical oceanography, and I decided to give it a try.”

When McNamara announced that he was looking for students who might be interested in research, “it sounded pretty cool,” Williams says. “Two of us ended up doing the honors project, Chelsea and I, and the rest in directed independent studies and 495 classes.”

Williams struggled with math in high school. “I didn’t do very well in those huge aimless rambunctious classes. I decided to give it another go in my first year at community college. I basically started from

the bottom up my first year and didn’t take a real physics course until I was a junior because of it.”

At UNCW, physics classes are small and opportunities for one-on-one faculty mentoring great. Professors are known for their ability to spot latent talent, and Williams found “a clearer sense of direction” under McNamara. “He showed us the radical things you can do with computers, which I really enjoyed; how they apply to innumerable fields of physics and applied physics.”

Williams had “zero background in computer programming,” but learned “the ins and outs” from McNamara. Now, he reports his skills are “great,” and he’s eager and ready “to advertise to graduate schools.”

### Physics on the Beach: Independent Student Research

The department involves undergraduates in research as early as possible.

From McNamara, Hopkins and Williams have learned to create computer models that simulate and predict the fluidity and variance of water flow and shore places. The prediction algorithms could be

called the haiku of physics language – pre-defined patterns that are used to “train” a prediction algorithm to become acquainted with the system dynamics.

Hopkins’ algorithm was trained to learn from past coastline change and from environmental forces such as wave conditions to predict daily-to-weekly shoreline changes.

“Chelsea learns about the system behavior by looking at the data in a way that the traditional approach would not,” McNamara says. “Rather than focus on the details she is taking a more holistic look at shoreline evolution.”

“It is useful to predict what a shoreline will do over the time-scale of days to weeks, and currently there is not a satisfactory algorithm that does this,” McNamara says. Additionally, “her method is more accurate than current methods.”

Williams investigates fluid flow in the swash zone, often called the ‘biting edge of the sea’ where breaking waves crash onto the shore and create a fury of activity in a cauldron of sand and surf.

He looks at this system from the “birds-eye” view of complexity theory. His

computer model explores the possibility that chaos theory is the driving explanation for the motion of the water at the edge of the ocean. His honors project is cutting-edge in both computer science and physics.

Students like Williams and Hopkins qualify for the honors program, which tracks talented students into small, high-intensity sections. They will present their completed research for departmental honors orally and submit papers. McNamara expects that both papers will be published in peer-reviewed scientific journals.

### Soaring to New Heights: Project Helios

Physics majors Erik Minges '10 and Andrew Whitley '11 are directors of a multi-disciplinary collaborative project that includes 15 students from eight different departments as diverse as film studies, marketing and computer science and compete nationally against MIT, the University of Arizona, Iowa State and others.

The objective: reach near space using a helium balloon and a Level 2 Rocket called a *rockoon*. The winner will achieve the greatest altitude and be able to prove it.

Proving requires camera equipment able to capture still images and video feed, a



Andrew Whitley '11

Global Positioning System to track latitude and longitude and an altimeter to measure height above earth. The payload includes an inertia measurement unit (IMU) – an electronic device that reports on velocity, orientation and gravitational force. At an altitude of approximately 125,000 feet, the rocket will fire in order to propel the payload to the upper stratosphere to capture images of Earth.

Minges says the project has valuable research and development applications. "To get into space now costs a lot of money. To get into near space, where you can take a picture of the earth to image without spending a lot of money would be useful. Even hot air balloons would cost more than using this technology."

There may also be an educational application, "to approach middle and high school students to become interested in science – to learn the physics and math behind this unique project," Minges says.

A practice balloon launch and one practice rockoon launch are planned for April and June, respectively. The SEDS Innovation Challenge will be held Aug. 15 in Black Rock, Nev. Faculty advisor is Russell Herman, chair of Department of Physics and Physical Oceanography.



JACK LAM

### Where They Are Now: Letisha McLaughlin B.S. '06

Letisha McLaughlin received her B.S. in physics from UNC Wilmington in May 2006 and is a graduate student at NC State University. She is completing a two-year X-ray analysis of a supernova remnant estimated to be 33,000 light years from Earth.

"Most of the elements on Earth, including those in our bodies, were formed in the energetic processes which occur during a star's demise," she says.

McLaughlin attributes her success to the quality education she received in UNCW's physics department and "the small class sizes and excellent professor availability," she says. A frequent volunteer at local schools where she offers lessons in science to young students, McLaughlin plans to pursue a career in government or industry when she graduates.

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\*Rosenfeld, L.K., 1988. A post-graduate view of undergraduate programs in oceanography. *Oceanography*, 1: 11-13.



# Jerald Shynett

The Last Word:

By LaTacheé Howard '10

Assistant professor of music Jerald Shynett's contribution to jazz has been notably recognized. His band, Chuck Owen and the Jazz Surge, was among the nominees for a 2010 Grammy Award. Vince Mendoza, arranger for the band's most recent album, *The Comet's Tail: Performing the Compositions of Michael Brecker*, was nominated for Best Instrumental Arrangement for the track "Slings and Arrows."

Shynett says, "When we recorded *The Comet's Tail* – the album that 'Slings and Arrows' appears on – we didn't think about Grammy nominations.

We're a serious ensemble, and we try to create great art. Sometimes that connects to a broader audience, and sometimes it doesn't. It would be great if this nomination introduced us to a new audience. It sounds like such a cliché to say it, but it really is such an honor for the group and Vince Mendoza to be nominated."

The album was recorded as a tribute to Michael Brecker – regarded as one of the most influential jazz saxophonists of the last 30 years. Brecker died two months before he was to perform with the group. "So the nomination is meaningful in a lot of ways," Shynett says.

A teacher who inspires his students, Shynett teaches trombone, improvisation, jazz theory, jazz arranging, jazz history and jazz combo.

"I live in two worlds," he says, "the academic world and the competitive world of performance. Performing keeps me on my toes and allows me to share my experience with my students so that they can learn application of classroom theory – the practical aspects of performance."

Sean Higgins '03 learned jazz performance from Shynett. "I could ask him all the questions I wanted about any aspect of playing, and he answered my questions and played examples until I had so much to practice that I didn't want to hear anymore or it was just really late."

Today, Higgins is a U.S. Jazz Ambassador, taking the sound around the globe for the U.S. Department of State, Bureau of Educational and Cultural Affairs. He recently completed tours of the Middle East and Russia and released two albums of his own.

That is a legacy to *both* Shynett's teaching and his art.

LAURA JOHNSTON



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GLY

GGY

PAR

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PHY

5

majors that  
**ROCK**



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Four departments, five majors that rock  
– UNCW students are well prepared for  
graduate school and 21st century work.

**ANT** (left): Grayson Greco '09 plans to attend seminary and then pursue a Ph.D. in philosophy. "Anthropology – what a well-rounded major!" Greco says.

**GLY** (lower left): Stephanie White '09 M.S., recipient of the Victor Zullo Memorial Scholarship and several student research grants, is working in Raleigh for URS, an environmental consulting firm with offices in more than 30 countries.

**GGY** (center): Jamaica Lemons '10 is completing a certificate in geographic information science. An environmental studies major, Lemons says, "The GIS program is not just for environmental minded students, but is an excellent tool for business, social sciences and political science majors." Lemons' career path is urban development and city planning.

**PAR** (top): Ezekiel Orski-Ritchie '10 posed as Rodin's "The Thinker," a sculpture representative of the intense intellectual activity required to study philosophy and religion. An international student from France, he is applying to graduate schools in Germany to study international business.

**PHY** (right): Chelsea Hopkins '10 is the winner of the Hernandez Award in Physics for outstanding academic achievement. She has received offers from the University of Alabama Huntsville and Georgia Tech to study graduate geophysics.